

CLAIMS

What is claimed is:

5 *Sub B1* 1. A method for generating a mosaic image with an appearance that approximates a target image by utilizing a plurality of source images and a computer, comprising the steps of:

loading the target image into the computer;

10 dividing the target image into a plurality of tile regions, each tile region representing a distinct locus of the target image, and

for each tile region:

5 comparing source images to the tile region to produce a measurement of visual similarity, said comparing step including analyzing a plurality of individual portions of each source image;

selecting the source image with the highest measurement of visual similarity to represent the tile region; and

20 positioning the selected source image in the mosaic image at a locus corresponding to the locus of the tile region.

25 2. The method of claim 1 including the further step of dividing the tile region into distinct sub-regions, each sub-region corresponding to a specific portion of the source image, and comparing each respective sub-region with each respective source image portion to produce the measurement of visual similarity.

30 *Sub B2* 3. The method of claim 2 including the further step of employing source images having one pixel per respective sub-region.

35 3. A. The method of claim 1 wherein said comparing step includes the further step of computing the average Root-Mean Square error of Red, Green and Blue channels.

4. 5. The method of claim 1 including the further step of removing source images selected in said selecting step from consideration such that no one source image appears more than once in the mosaic image.

5 5 6. The method of claim 1 including the further step of capturing source images, and storing the captured source images in a database.

10 6 7. The method of claim ⁵6 including the further step of generating modified source images by cropping the source images captured in said capturing step to square.

5 7 8. The method of claim ⁶7 including the further step of, in the case of a captured source image in landscape format, cropping the captured image from center.

10 8 9. The method of claim ⁷8 including the further step of, in the case of a captured source image in portrait format, cropping the captured image from above center.

9 10. The method of claim ⁶9 including the further step of categorizing the captured source images within the database.

25 10 11. The method of claim ⁶10 including the further step of storing the captured source images at different levels of resolution.

30 11 12. The method of claim 1 including the further step of deselecting the source image with the highest measurement of visual similarity if it is determined that the source image has a higher measurement of visual similarity to another tile region.

35 12 13. The method of claim 1 including the further step of specifying at least one source image for assured inclusion in the mosaic image, the assured source image being

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17

positioned in the mosaic image at a locus corresponding to the locus of the tile region having the highest measure of visual similarity therewith.

5 ~~B14.~~ The method of claim 1 including the further step of specifying a sub-category of source images for exclusive matching with a predetermined portion of the target image.

10 ~~Sub B3~~ 15. An apparatus for generating a mosaic image with an appearance that approximates a target image by utilizing a plurality of source images, comprising:

15 A computer workstation that executes mosaic generation software being operative to divide the target image into a plurality of tile regions, each tile region representing a distinct locus of the target image,

20 said mosaic generation software being further operative to operate upon each tile region to:

25 compare a plurality of source image portions to the tile region to produce a measurement of visual similarity;

30 select the source image with the highest measurement of visual similarity to represent the tile region; and

35 position the selected source image in the mosaic image at a locus corresponding to the locus of the tile region.

40 ~~16. The apparatus of claim 15 wherein the mosaic generation software is further operative to divide the tile region into distinct sub-regions, each sub-region corresponding to a specific portion of the source image, ^B each respective sub-region being compared with each respective source image portion to produce the measurement of visual similarity.~~

45 ~~Sub B4~~ 17. The apparatus of claim 16 wherein the source image employed for comparison with the tile region has one pixel ~~per respective sub-region.~~

16 18. The apparatus of claim ¹⁴15 wherein the mosaic generation software is further operative to compute the average Root-Mean Square error of Red, Green and Blue channels.

5 17 19. The apparatus of claim ¹⁴15 wherein the mosaic generation software is further operative to remove selected source images selected from consideration such that no one source image appears more than once in the mosaic image.

10 18 20. The apparatus of claim ¹⁴15 further including video equipment selected from the group consisting of a video tape player and a videodisc player, said video equipment being operative to capture source images for storage in a database in the computer workstation.

15 19 21. The apparatus of claim ¹⁸20 wherein modified source images are generated by cropping and resizing the captured source images to a consistent size.

20 20 22. The apparatus of claim ¹⁹21 wherein, in the case of a captured source image in landscape format, the captured image is cropped from center.

25 21 23. The apparatus of claim ²⁰22 wherein, in the case of a captured source image in portrait format, the captured image is cropped from above center.

30 22 24. The apparatus of claim ¹⁹21 wherein the captured source images are categorized within the database.

33 23 25. The apparatus of claim ¹⁹21 wherein the captured source images are stored at different levels of resolution.

35 24 26. The apparatus of claim ¹⁸20 further including an editing computer with software for editing the mosaic image.

25 27. The apparatus of claim 26²⁴ further including a printer for printing the edited mosaic image.

14

5 28. The apparatus of claim 13 wherein the source image with the highest measurement of visual similarity is deselected if it is determined that the source image has a higher measurement of visual similarity to another tile region.

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10 29. The apparatus of claim 15 wherein at least one source image is assured inclusion in the mosaic image, the assured source image being positioned in the mosaic image at a locus corresponding to the locus of the tile region having the highest measure of visual similarity therewith.

14

15 30. The apparatus of claim 15 wherein a sub-category of source images is specified for exclusive matching with a predetermined portion of the target image.

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